COMMUNICATIONS EQUIPMENT MODIFICATION NOTE 40 (for Electronics Technicians)
Engineering Division
W/OSO321: TES

SUBJECT	:	Console Replacement System (CRS) Line Printer and LAN Bridge Modifications for CRS Version 6.0 Software Installation
PURPOSE	:	To modify the hardware flow control of the EPSON LX-300 printer and to reconfigure the LANTRONIX LB2 LAN Bridge to filter digital broadcast packets
SITES AFFECTED	:	All CRS sites
EQUIPMENT AFFECTED	:	CRS (B440)
PARTS REQUIRED	:	(1) RJ-45 to DB25M cable adapter (see figure A1) NOTE: The parts required will be issued to each site by W/OSO12.
TOOLS AND TEST EQUIPMENT REQUIRED	:	Flat blade screwdriver RS-232 terminal or personal computer with PROCOM PLUS
TIME REQUIRED	:	2 hours
EFFECT ON OTHER INSTRUCTIONS	:	None
AUTHORIZATION	:	The authority for this modification is Request for Change SRH643D.
VERIFICATION STATEMENT	:	This procedure has been verified at the following CRS sites: Charleston, WV - RLX Oxnard, CA - LOX Pleasant Hill, MO - EAX Birmingham, AL - BMX Miami, FL - MFL Monterey, CA - MTR San Diego, CA - SGX WSH - SLVM2

GENERAL : Attachment **A** contains instructions to change the printer cable adapter and change parameters in the Digi LAN server.
Attachment **B** contains instructions to configure the Lantronix LB2 LAN Bridge to filter digital recording broadcast packets. Attachment **A** is to be performed prior to Attachment **B**. These procedures ***must*** be performed immediately before installation of CRS version 6.0 software.

REPORTING INSTRUCTIONS : Report completed modification on a WS Form A-26, Maintenance Record, using the instructions in Engineering Handbook No. 4 (EHB-4), Engineering Management Reporting System (EMRS), part 2, appendix I. Use equipment code B440 in block 7. Record the modification number in block 17(a) as 40.

See attachment **C** for a completed sample of WS Form A-26, Maintenance Record.

John McNulty
Chief, Engineering Division

Attachment A - Printer Hardware Control Modification Procedure
Attachment B - Lantronix LB2 LAN Bridge Reconfiguration Procedure
Attachment C - A-26 Sample Form

Attachment A

Printer Hardware Flow Control Modification Procedure

Attachment A

Print Hardware Flow Control Modification Procedure

Note: **Perform this procedure prior to the installation of CRS software version 6.0.**

Step 1. Replace the existing RJ-45 to DB25M cable adapter.

a. Turn the Epson LX-300 printer off.

b. Remove the existing RJ-45 to DB25M cable adapter.

Note: **The removed adapter shall be marked as CRS version 5.0 and retained for future use.**

c. Install the new cable adapter.

d. Turn the Epson LX-300 printer on.

Step 2. Change "port" parameter on the Digi LAN Server.

a. Set the Shared Monitor Switch to **1FEP**.

b. Login as **root**.

Type **root** and press the <**Enter**> key. The system responds *password*.

Type **cpe94cpe** and press the <**Enter**> key. The system responds with *1FEP{root}*.

c. At the **1FEP{root}** prompt, type **telnet PS8** and press the <**Enter**> key.

Login to PS8 as **root** and press the <**Enter**> key.

At the password prompt, type **dbps** and press the <**Enter**> key.

d. To change setting: Type **set port dev=prn ra=2** and press the <**Enter**> key.

e. To verify setting: Type: **set port ra=2** and press the <**Enter**> key. The correct settings are:

tty	termtype	dev	sess	uid	edelay	auto	bin	group	dport	dest
2	vt100	prn	4	0	1	off	off	0	0	255.255.255.255

Step 3. Change “flow” parameter on the Digi LAN Server.

Note: You are still logged into PS8 as “root” for this step.

a. To change setting: Type **set flow altpin=on ra=2** and press the <**Enter**> key.

b. To verify setting: Type **set flow ra=2** and press the <**Enter**> key. The correct settings are:

tty	ixon	aixon	ixoff	ixany	itoss	altpin	rts	dtr	cts	dcd	dsr	ri
2	off	off	off	off	off	on	off	off	off	off	off	off

Step 4. Log out of PS8 (LAN Server).

a. Type **exit** at **#>** prompt and press the <**Enter**> key.

Step 5. Replace the operational Digi LAN Server with the spare unit.

Step 6. Shutdown and reboot 1FEP.

a. Type **/sbin/shutdown -y -i0 -g0** at **1FEP{root}** prompt and press the <**Enter**> key.

b. 1FEP will shutdown and eventually the following prompt will appear:

Press any key to reboot

c. Press the <**Enter**> key to reboot the system.

Step 7. Perform step 2.b through step 4.a on the spare Digi LAN Server. If you are unable to telnet into the spare unit, it’s probably because the IP address in the unit is incorrect. Please note the Digi LAN Server’s IP address must be the same as PS8 IP address in the /etc/hosts file on 0MP. Consult the Digi LAN (Port) Server Users’ Guide for instructions to set the IP address.

Step 8. Replace the spare Digi LAN Server with the operational unit.

Step 9. Repeat step 6.

Note: **Mark both Digi LAN Servers as " Set up for Build 6."**

WARNING

If the spare LAN Server is left in the system, CRS will not be able to return to an operational state because of the new MAC address. Additional steps must be taken to make CRS aware of the new MAC address so it will initialize properly. Consequently, it strongly advised sites to return the operational LAN Server to the system.

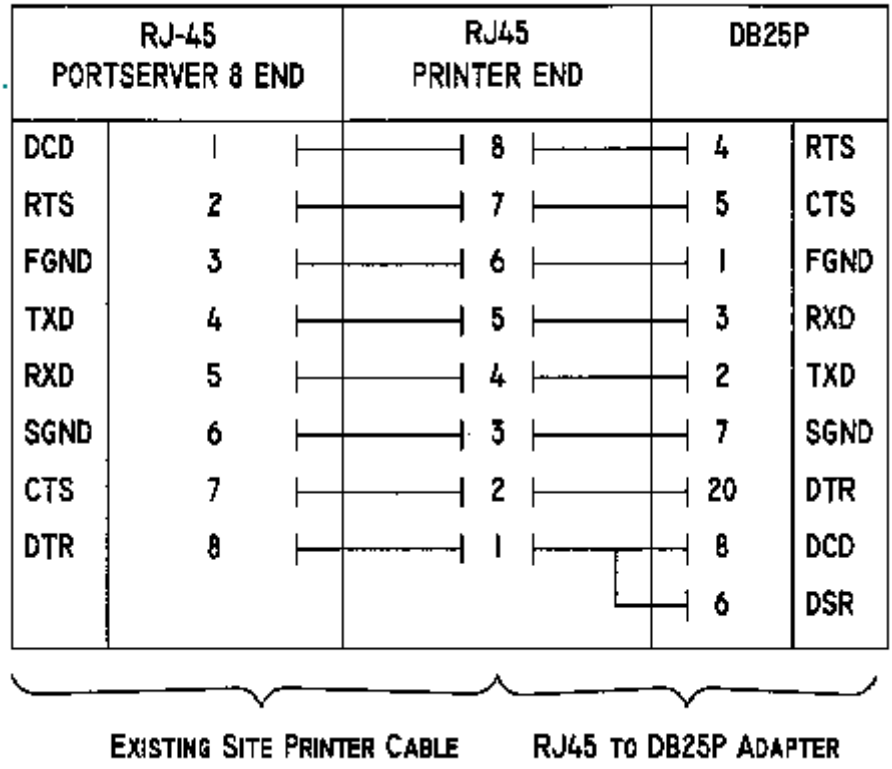

Figure A1. CRS Epson LX-300 Cable Adapter

Attachment B

Lantronix LB2 LAN Bridge Reconfiguration Procedure

Attachment B

LANTRONIX LB2 LAN Bridge Reconfiguration Procedure

The following procedure reconfigures the LB2 CRS LAN Bridge to filter out the digital recording broadcast packets to prevent them from crossing the CRS LAN segment to the AWIPS LAN segment.

Step 1. Locating the CRS LAN attachment unit interface (AIU) port.

a. Look at the rear of the CRS LB2 unit located on a shelf of the CRS FEP rack enclosure.

b. There should be at least one (possibly two) transceiver box connected to the ports labeled **#AIU 1** and **#AIU 2**.

c. Connected to the back of the CRS LAN transceiver of interest is a BNC-T cable which connects the CRS computers in a network loop. Locate this transceiver and note the AIU port number. This number will be of value later in this procedure.

Note: Should there be two identically-looking transceivers with BNC-T connectors, one of these loops contains the CRS LAN segment and the other contains the AWIPS or a site-constructed LAN segment. The 10-Base2 cabling must be traced to determine the CRS LAN segment loop and associated AIU port. (Normally the CRS LAN transceiver is connected on AIU 1. The CRS LAN transceiver should have the following written on it: ("Lantronix LTX-2A Thin Coax Transceiver IEEE 802.3 10BASE2".)

Step 2. Connecting to the CRS LB2 LAN Bridge.

a. Obtain an RS-232 terminal (or use a PC with terminal emulation software like PROCOMM Plus and the appropriate cabling), and connect the data cable to the port labeled **Serial** on the back of the LB2 unit. This port is just to the right of AIU port 2. It may be more convenient to disconnect the LAN bridge from the BNC-T connectors before connecting to the terminal. The transceivers may stay connected to the LAN bridge. Terminal access is required since the LB2 has not been configured for telnet access, i.e., the LB2 does not have an IP address.

b. Configure the terminal for standard VT100 emulation with serial parameters of 9600 baud, 8 data bits, no parity bits, and 1 stop bit.

c. Obtain an LB2 login prompt by pressing the **<Enter>** key a few times. The system will respond with the following prompt:

Username>

d. Type **system** and press **<Enter>**. The system will respond with the following prompt:

Local_1>

e. Type **su** and press **<Enter>**. The system will respond with the following prompt:

Password>

f. Enter the password **system** and press **<Enter>**. Supervisor (root) privileges are now available to modify the LB2 configuration. The system will respond with the following prompt:

Local_1>>

Step 3. Configuring the LB2 for broadcast packet filtering.

a. Reset the LB2 to the factory default settings by issuing the command:

initialize factory and press **<Enter>**. The system will respond with the following message:

Exiting the Lantronix LB2

Note: The system will reboot itself. The reboot takes less than 1 minute.

b. Repeat steps 2c-f.

c. Permanently define a filter (1) to reject all CRS LAN outbound broadcast packets by issuing the command:

define filter 1 append protocol ip udp deny and press **<Enter>**. It will take several seconds before a prompt is returned.

Note: The *define* command writes the LB2 configuration to flash ROM, making this setting permanent so that power-downs and standard LB2 initializations do not reset it. However, the *initialize factory* command will cause all permanent settings to revert to their factory defaults. Also, the LB2 settings used are those which reside in volatile RAM; thus, a power cycle of the LB2 unit after these configuration steps is required to refresh the volatile (used) settings with the permanent ones. Please be patient since permanent settings take longer to apply than transient ones.

d. Permanently assign the broadcast reject filter to the CRS LAN port by issuing the command:

define bridge ethernet <port#> filter 1 and press **<Enter>**

Note: <port#> is the number of the CRS LAN AIU port recorded in *step 1c* of this procedure. It will take several seconds before a prompt is returned.

e. Logout from the LB2 unit by issuing the command:

logout and press **<Enter>**

The system will respond with the following message:

Exiting the Lantronix LB2

Step 4. Enabling and verifying permanent LB2 changes.

a. Cycle power on the LB2 unit.

b. Verify the LB2 proceeds through power up as indicated on the connected serial terminal.

c. Repeat steps 2c-f.

d. Verify the broadcast packet filtering construct by issuing the command:

show filter 1 and press **<Enter>**

The resultant listing should report one filter as *Deny Protocol IP UDP.*

e. Verify the broadcast packet filtering construct is applied to the CRS LAN AIU port by issuing the command:

show bridge and press **<Enter>**

The resultant listing should report the broadcast filter is applied to the port recorded in step 1c of this procedure.

f. Logout from the LB2 unit by issuing the command:

logout and press **<Enter>**

The system will respond with the following message:

Exiting the Lantronix LB2

g. Disconnect the terminal data cable from the LAN bridge serial port.

Note: If in step 2a the LAN Bridge was disconnected from the BNC-T connectors, reconnect them at this time.

Step 5. Reconfigure the spare LAN bridge.

a. Connect the terminal data cable to the spare LAN bridge serial port.

b. Connect the power cable to the spare LAN bridge, and turn on the power.

c. Repeat steps 2c-4f to install the filter on the spare Lantronix LB2 LAN bridge.

d. Disconnect the terminal data cable from the LAN bridge serial port and turn off the power.

Step 6. Mark both Lantronix LAN bridges as “Set Up For Build 6.0".

Step 7. Install CRS Build 6.0 software in accordance with Software Note 1.

ENGINEERING MANAGEMENT REPORTING SYSTEM
MAINTENANCE RECORD

Document Number: **G 59903**

General Information	1. Open Date	Time	2. Initials	3. Response Priority (check one)	4. Close Date	Time
	11 / 01 / 99	0900	ABC	○ Immediate ○ Low ○ Routine ☒ Not Applicable	11 / 01 / 99	1000

5. Description: **CRS LINE PRINTER MODIFICATION FOR CRS VERSION 6.0 SOFTWARE**

Equipment Information	6. Station ID	7. Equipment Code	8. Serial Number	9. TM	10. AT	11. How Mal.
	LWX	B440	6RSEK0619	M	M	999

12. *EQUIPMENT OPERATIONAL STATUS TIMES*	a. **Fully Operational**	b. Logistics Delay	**Partly Operational**	c. All Other	d. Logistics Delay	**Not Operational**	e. All Other
							1:00

13. *Parts Failure Information*

Block #	a. ASN	b. NSN	c. TM	d. AT	e. How Mal.	f. Qty.	g. Maint. Hrs.
1							
2							
3							
4							
5							

14. *Work Load Information*

Type	Staff Hrs.
a. Routine	
b. Non-routine	
c. Travel	
d. Misc.	1:00
e. Overtime	

Miscellaneous Information	15. Maintenance Comments	16. Initials
	IAW MOD NOTE 40: CHANGED PRINTER CABLE ADAPTER. CHANGED PARAMETERS ON DIGI LAN SERVER. REPLACED OPERATIONAL DIGI LAN SERVER WITH SPARE UNIT.	ABC

17. *SPECIAL PURPOSE REPORTING*	a. Mod. No.	b. Mod./Act./Deact.Date	c.	d.	e.
	40	11/01/99			

18. *CONFIGURATION MGMT. REPORTING* *(use as directed)*	ASN	Vendor Part Number (New Part)	Serial Number (Old Part)	Serial Number (New Part)